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APPENDIX D. TRANSIT STUDY

SUMMARY RECOMMENDATIONS

The transit plan for the Black Mountain Ranch North Village suggests a phased approach to transit development, based in great part on partnerships to be developed with major employers and the regional transit agencies. The development of such relationships will depend on the leadership of certain key institutions, including the developers of Black Mountain Ranch. These three themes, phasing, partnerships and leadership, are detailed below.

Phasing

Current plans for road development to the North Village (essentially, building only access to the south until improvements are made on the I-15 corridor) suggest a two-phased approach to transit development. These phases also follow a pattern identified in the case studies that accompany this report, and hence represent not just the reality of traffic planning, but the preferred means of transit service implementation.

Phase I. The “chicken-and-egg” problem of developing transit service to new developments (whether transit should precede or follow settlement) suggests an initial approach to transit development which is low-cost, flexible, and tied directly to places of high demand (so as to “jump-start” interest in transit services). A vanpool program, connecting the North Village with a few key employment sites, is recommended for Phase I. Such a program involves manageable capital costs, low operating costs, relatively low administrative overhead and allows for cost-sharing among a variety of beneficiaries and agencies. What’s more, a vanpool program creates a class of transit service which is time-competitive with the auto, a key factor in appealing to the mode-choice (auto driver) market. Vanpools do not happen in a vacuum. An effective vanpool program will require the identification of employer partners and the support and leadership of the San Diego Association of Governments (SANDAG) and the regional transit agencies (especially as effective vanpool programs require a package of related services, such as Guaranteed Ride Home). Still, the low costs and high potential benefit of this type of program makes it a natural choice for Phase I services.

Phase II. Once a road connection to the east is established, two kinds of transit services become feasible. The first involves the extension of the terminus of the County Commuter Express Bus Route 850 to the North Village Transit Center. Such an extension could be accomplished at very little additional cost to county Transit and would provide direct peak-hour service from Black Mountain Ranch to employment sites downtown.

The second kind of Phase II transit service depends on the development by the Metropolitan Transit Development Board (MTDB) of some kind of rapid transit service along the I-15 corridor, most likely the “Bus Rapid Transit” alternative currently being studied. If this, or some similar service, provides direct connections to major employment centers and residential zones, then it would be feasible to design a bus shuttle system connecting Black Mountain Ranch with the proposed transit station at Bernardo Center Drive and I-15,

providing that co-sponsoring arrangements may be made with key employers in the Bernardo Industrial Park and potentially with the 4S Ranch development. Such a multi-purpose shuttle can be designed to provide excellent connections for Black Mountain (and possibly 4S) residents to and from the I-15 service, as well as for employees of the industrial park making the reverse commute. Several potential routings are included in the body of this report. The experience of other developments implementing similar shuttles is outlined in the case studies that accompany this report.

Partnerships

The key to devising effective transit services is the development of partnerships with other key actors. Both the proposed vanpool program and the potential shuttle program depend on the quality of transit connections that are made for residents of Black Mountain Ranch. For that reason, it is important to identify the employment sites most likely to benefit from co-sponsoring vanpools, as well as to plan jointly with neighboring residential and industrial developments any potential shuttle service to connect into I-15 service, when and if that service becomes established. Partnerships will necessarily involve several key elements: capital financing, operating financing and facility provision. Employers who will benefit from the vanpool program (a direct benefit is a reduction in parking needs; an indirect benefit is a reduction in employee stress levels) may contribute directly to the costs of establishing vanpools (both capital and operating), or may contribute indirectly through an “eco pass” program with the appropriate transit agency. Eco passes (essentially, a program by which transit passes are made available to all employees in an organization in exchange for a steep discount in the per-employee price, paid by the employer) offer an excellent opportunity to design and fund such tailor-made services as part of a coherent package of services; the MTDB in particular is interested in developing its eco pass program.

Employers will also need to make certain facilities available to vanpoolers, such as preferred parking, so as to reward participation in pool programs.

Leadership

If the phased transit strategy depends on building effective partnerships, and effective partnerships involve more than just a strong bilateral relationship, then it is clear that some leadership will be necessary to create and sustain mutually beneficial partnerships. Black Mountain Ranch will need to work directly with the MTDB, the NCTD and SANDAG (through its RideLink office) to encourage these organizations to assume a leadership role in identifying potential partners, establishing policies that encourage joint vanpool and shuttle programs, and in devising equitable financing arrangements to make such services and programs economically viable. A strong commitment by the regional transit agencies to develop strong vanpool and shuttle programs can help ensure widespread participation and cost efficiencies. Both the Santa Clara Valley Transportation Authority’s shuttle program and the suburban Chicago PACE’s vanpool program should be studied as models for how to develop these kinds of programs. Black Mountain Ranch has already demonstrated significant initiative in promoting a transit-friendly urban design for the North Village and in highlighting the importance of transit in serving this project. This report contains several suggestions as to how to maximize the centrality of transit to the project; such efforts on the part of Black Mountain Ranch should prompt the regional transit agencies and employer partners to provide

the kinds of services and facilities that will truly provide viable and popular alternatives to automobile travel.

CURRENT TRANSIT PLANS FOR THE I-15 CORRIDOR

The Interstate 15 corridor south of Escondido falls within the service area of the Metropolitan Transit Development Board (MTDB). The corridor is minimally served by the San Diego Transit Route 20 bus and several “commuter express” buses run by county Transit. The corridor is the focus of a major investment study to determine whether improved services are warranted. The ultimate quality of transit service to Black Mountain Ranch will depend on the results of this study.

MTDB Route 20

The Route 20 bus runs “express” service between North County Fair and downtown San Diego. Buses run approximately every half hour during the day in both directions seven days a week (with shorter service spans on weekends). Trip times from the Bernardo Industrial Park to Downtown are approximately 1:25; trips to Fashion Valley take about 1:15. This route will almost definitely be terminated or changed significantly following implementation of any new major I-15 corridor transit service.

Commuter Express Route 850

County Transit Service (CTS) runs a commuter express bus between downtown San Diego and the western fringe of Rancho Bernardo. This bus has a terminus at Bernardo Center Drive and Maturin Drive, just off Camino del Norte. The 850 makes six stops en route through Rancho Peñasquitos before continuing direct to downtown. There are four runs, all southbound, in the morning (beginning at 5:53 A.M. at 30-minute frequencies) and four, all northbound, in the afternoon (beginning at 4:01 P.M. and leaving at 30-minute frequencies). Trip time between the terminus and Fifth & B is 45 minutes. The commuter express buses are generally well used and popular with riders. Most riders are drawn from the mode-choice (car owner) market, and average household incomes are above \$40,000/year. Though riders pay a premium to use these buses, a large per-passenger subsidy is still required (due in part to the relatively small share of in-service time per each hour of operation). This large subsidy threatens the expandability of the program. Buses are contracted to private operators, who use the vehicles to conduct tour and charter services during the day.

I-15 Corridor Service

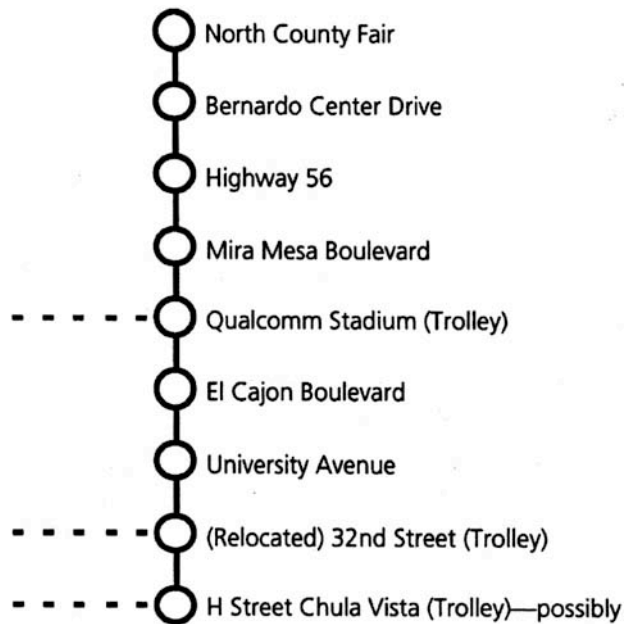
The MTDB is in the early stages of a major study analyzing service alternatives for the Interstate 15 corridor. Though Light Rail (trolley) is frequently championed by elected officials, usage and cost studies tend to highlight the impracticality of trolley service on this corridor.* The MTDB is currently investigating the possibility of “Bus Rapid Transit” service instead, using some form of bus running on managed lanes with direct on/off ramps to transit centers en route. The Bus Rapid Transit system would be comprised of two kinds of routes:

* The four primary problems with Light Rail in this corridor are costs of construction, routing, station location and service speed.

1. Trunk line service along the corridor, operating throughout the day; and
2. Peak-hour overlay service, serving origins or destinations not on the corridor itself (for example, from BMR Transit Center to Sorrento Mesa).

The stations planned for the corridor would be as follows (dashed lines indicate transfer stations to existing or planned trolley stations).

It is worth noting that no station is planned for Camino del Norte; any access to Black Mountain Ranch will need to be via Bernardo Center Drive. If the planned Bus Rapid Transit system were run with the frequency of the trolley, it would feature service every 15 minutes throughout the day.



Phase I of the I-15 corridor study, the narrowing of alternatives, will be completed by Fall, 1998. Phase II, the refining of the service concepts, will begin in 1999. Funding concerns, particularly for the operating costs of providing service, will be a major issue. There are a number of concerns with the proposed routing of the Bus Rapid Transit system which are addressed in the Key Points to Be Raised with the MTDB section of this report.

SERVICE OPTIONS

There are four service options which can provide transit service to the Black Mountain Ranch North Village.

Extend Commuter Express Bus 850

There are two means of extending the County Transit Route 850 bus:

1. Extension. Establish a new terminus at the North Village Transit Center, possibly moving the Bernardo Center Drive/Maturin Drive stop to Bernardo Center Drive by Camino del Norte.
2. Route splitting. Divide the 850 into two routes: one serving just Rancho Peñasquitos (with a terminus at Peñasquitos Drive and Carmel Mountain Road), the other serving Rancho Bernardo West, 4S Ranch and Black Mountain Ranch, with a terminus at the North Village Transit Center. This arrangement may make sense, when one considers that the 850 has the highest ridership per revenue mile (FY 1996 data), the lowest per-passenger subsidy, and the highest ridership per revenue hour of all the Commuter Express services. By splitting the route, new ridership can be accommodated on the route and trip times improved for Bernardo-area riders. If service were provided on the reverse commute, it might be possible to solicit employer contributions to the routes provided they were served by direct stops.

The cost of providing 850 service (1996 data) was \$212,788, of which \$92,598 was recovered by fares. Total subsidy amount was \$120,190. It is possible that financial performance could be improved, at least slightly, if revenue service were offered in both directions during each time period, especially if the buses were routed by one of the key employers in the Bernardo Industrial Park.

Of the two options, the first—extension—appears to involve the fewest costs (though the time implications of extending the terminus have not yet been worked out), whereas the second—route splitting—involves considerable costs.

Establish vanpools to key employment sites

Vanpools are a very cost-effective transit service, since they eliminate the single largest component of operating costs: the price of labor. The concentration of some 2,000 residential units near the North Village Transit Center, as well as the presence of HOV lanes (and future managed lanes) on I-15 improves the potential attractiveness of vanpools to those who choose to live in Black Mountain Ranch and work at major employment sites in the metro area. Vanpools may also be partially funded through employer eco pass programs (which the MTDB is currently developing). Vanpools may also run on alternative routes, such as south to State Route 56 (SR-56), with no degradation in service compared to automobiles.

Establish a local shuttle service

Should some form of regular, high-grade transit service be established along the I-15 corridor (such as the Bus Rapid Transit system under consideration), and should this system feature appropriate links to key demand generators (such as employment and entertainment sites), there might be sufficient incentive to establish a supporting local shuttle service connecting the North Village Transit Center with the I-15 system.

A local shuttle service works best when it offers a reasonably direct, quick and convenient connection. A local shuttle also works best if it supports employment as well as residential destinations.

A rough routing for a local shuttle service suggests a single “loop” connecting the residential areas of North Village and potentially 4S Ranch, major employers in the Bernardo Industrial Park (and North Village), and the proposed Rapid Bus station on Bernardo Center Drive. Service need only be offered in one direction in the A.M. peak and the reverse direction in the P.M. peak. In the A.M. peak, shuttles would leave the Rapid Bus station and traverse the industrial park, dropping off workers brought in on the rapid buses. The shuttle would then continue to the residential developments, where it would take on local residents on their way to the rapid buses. The shuttle would then proceed directly back to the rapid bus station. In the P.M. peak, the direction would be reversed. This routing minimizes trip times and maximizes capacity along the route. Maps illustrating potential routings follow the route descriptions.

A.M. Peak Routing	A.M. Peak Alternative Routing	P.M. Peak Routing	P.M. Peak Alternative Routing
Begin at Rapid Bus Station "A"	Begin at Rapid Bus Station "A"	Begin at Rapid Bus Station "A"	Begin at Rapid Bus Station "A"
Continue through Industrial Park "B" on route, stops to be determined	Continue through Industrial Park "B" on route, stops to be determined	Proceed to North Village East Stop "D," serving the employment centers and schools	Proceed potentially to 4S Ranch Transit Center "C"
Proceed potentially to 4S Ranch Transit Center "C"	Proceed to North Village East Stop "D," serving the employment centers and schools	Proceed to North Village Plaza/Transit Center "E"	Proceed to North Village East Stop "D," serving the employment centers and schools
Proceed to North Village East Stop "D," serving the employment centers and schools	Proceed to North Village Plaza/Transit Center "E"	Proceed to North Village Senior Center "F" (possibly off-peak only)	Proceed to North Village Plaza/Transit Center "E"
Proceed to North Village Plaza/Transit Center "E"	Proceed to North Village Senior Center "F" (possibly off-peak only)	Proceed potentially to 4S Ranch Transit Center "C"	Proceed to North Village Senior Center "F" (possibly off-peak only)
Proceed to North Village Senior Center "F" (possibly off-peak only)	Proceed potentially to 4S Ranch Transit Center "C"	Continue through Industrial Park "B" on route, stops to be determined	Continue through Industrial Park "B" on route, stops to be determined
Continue directly to Rapid Bus Station "A"	Continue directly to Rapid Bus Station "A"	Continue directly to Rapid Bus Station "A"	Continue directly to Rapid Bus Station "A"

Proposed A.M. — Peak Routing

Begin at Rapid Bus
Station “A”

Continue through
Industrial Park “B” on
route, stops to be
determined

Proceed potentially to
4S Ranch Transit
Center “C”

Proceed to North
Village East Stop “D,”
serving the
employment centers
and schools

Proceed to North
Village Plaza/Transit
Center “E”

Proceed to North
Village Senior Center
“F” (possibly off-peak
only)

Continue directly to
Rapid Bus Station “A”

Proposed A.M. — Peak Alternative Routing

Begin at Rapid Bus
Station “A”

Continue through
Industrial Park “B” on
route, stops to be
determined

Proceed to North
Village East Stop “D,”
serving the
employment centers
and schools

Proceed to North
Village Plaza/Transit
Center “E”

Proceed to North
Village Senior Center
“F” (possibly off-peak
only)

Proceed potentially to
4S Ranch Transit
Center “C”

Continue directly to
Rapid Bus Station “A”

Proposed P.M. — Peak Routing

Begin at Rapid Bus
Station “A”

Proceed to North
Village East Stop “D,”
serving the
employment centers
and schools

Proceed to North
Village Plaza/Transit
Center “E”

Proceed to North
Village Senior Center
“F” (possibly off-peak
only)

Proceed potentially to
4S Ranch Transit
Center “C”

Continue through
Industrial Park “B” on
route, stops to be
determined

Continue directly to
Rapid Bus Station “A”

Proposed P.M. — Peak Alternative Routing

Begin at Rapid Bus
Station “A”

Proceed potentially to
4S Ranch Transit
Center “C”

Proceed to North
Village East Stop “D,”
serving the
employment centers
and schools

Proceed to North
Village Plaza/Transit
Center “E”

Proceed to North
Village Senior Center
“F” (possibly off-peak
only)

Continue through
Industrial Park “B” on
route, stops to be
determined

Continue directly to
Rapid Bus Station “A”

The development of this kind of shuttle routing accomplishes several objectives.

1. Unlike current Commuter Express Bus system, it creates a viable two-way system (bringing workers to the target zone and bringing residents from that zone to employment sites elsewhere).
2. It allows for a wider base of support than a shuttle serving one residential development exclusively or serving such developments only.
3. By providing transit access in three points of North Village, it meets the needs of three distinct groups: those arriving from other points (including 4S Ranch) who work in the North Village employment district or in the schools, residents in the core village area, and seniors in the senior housing to the west.

What would a shuttle system cost? There are a number of variables at work, such as hours of service and number of vehicles needed. If a single round trip can be accomplished in under 15 minutes, then only a single vehicle would be needed to achieve service matching likely service on the proposed Bus Rapid Transit system. The following table suggests a range of likely costs.

Hours of Operation		Hours per Day	Days per Week	Hours per Year	Cost per Year @	
A.M.	P.M.				\$37.50/hr	\$60.00/hr
6:00 - 9:00	4:00 - 7:00	6	5	1,560	\$58,500	\$93,600
5:30 - 9:30	3:30 - 7:30	8	6	2,496	\$93,600	\$149,760
6:00 - 11:59	12:00 - 10:00	16	7	5,824	\$218,400	\$349,440

Clearly, there is a wide range of potential costs. It is recommended that any funding plan involve partnerships among the beneficiaries of such services as well as the regional transportation agencies. Such collaborative efforts can also improve the chances of qualifying for state or federal assistance. It is also recommended, following the Santa Clara VTA's example (outlined in the case studies that accompany this report), that shuttle services remain free to the rider, especially if residents and employers (the beneficiaries) make contributions to the operating budget for the service.

Establish bus rapid transit special service

The Bus Rapid Transit Service being studied for the I-15 corridor involves two kinds of services: trunk line and peak-hour. Peak-hour services will supplement the trunk line service, and will involve buses leaving the I-15 corridor in order to reach key employment sites throughout the metro area. Such buses will pass through a major transit center at the intersection of I-15 and SR-56, allowing extensive transfers among routes. Black Mountain Ranch should keep apprised of the development of these services, and offer its North Village Transit Center as a logical terminus for some of these routes. In addition to the benefits to the regional transit agencies, such services will allow residents of Black Mountain Ranch to ride single vehicles to get to a range of important destinations.

KEY ISSUES FOR BLACK MOUNTAIN RANCH

Station location and design

The design and siting of the proposed North Village Transit Center depends in part on the kinds of transit services to be developed.

Potential Service	Station Requirements
Extension of Route 850	Single Transit Center
Vanpool Program	Single Transit Center
Local Shuttle Service	“Split” Transit Center plus two supplemental stations (West Senior Station and East Employment Station)
Rapid Bus Peak Service	Single Transit Center

As described above, stations requirements depend in great part on the kinds of transit services offered. Commuter services generally require only a single transit station, since most workers live within walking distance of the likely locations of that station or will access that center through park-and-ride or kiss-and-ride. Shuttle services create two additional kinds of trips: people arriving to work in the North Village and seniors from the North Village (and students) making non-work trips. To accommodate these two groups, additional roadside “stations” may be useful, one in the eastern part of North Village by the schools and employment center, the other in the heart of the seniors residential complex (almost all of which lies beyond 1/4 mile of the proposed Transit Center).

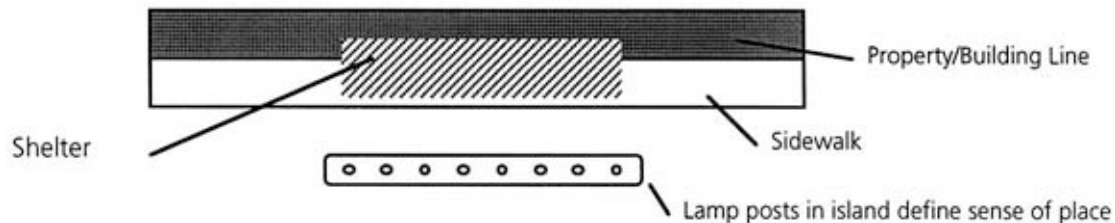
Station location principles. A goal of developments influenced by the “New Urbanism” is to promote transit use through design that accords transit a central role in serving destinations. Peripheral locations for transit access are discouraged, as peripheral locations tend to diminish the value and utility of transit in the eyes of potential users. This is known as the “Harvard Square Rule”—to the extent that transit access is in the center of the target area, it becomes synonymous with that area.

The proposed location for the Transit Center places it slightly outside the core service area. While this location makes sense in terms of the adjacent park-and-ride facility, it means that those walking to transit from the surrounding neighborhood will need to leave the core “defined” spaces and wait in what is essentially a parking lot.

At the same time, there are two different transit conditions at the Transit Center. Commuter bus services, if offered, generally feature larger vehicles. Any shuttle service would likely feature smaller, more street-friendly vehicles.

A possible solution to the “centrality” problem would be to locate transit access one block south of the proposed Transit Center (which would remain a park-and-ride facility), with the station itself “bridging” the block. The shuttle bus stop could be located on the Promenade as close as possible to the Village Green, with a walk-through to the rear of the block, where commuter bus bays and kiss-and-ride facilities can be offered. An illustration of this concept follows.

The East and West substations should, if adopted, follow a similar design pattern to the Village Green Shuttle Station. A row of street lamps can help define the space, and seating should be sheltered and pushed back from the street curb so that those waiting feel less “exposed.” Sensitive design can help ensure acceptance of the transit services. An illustrated diagram of a satellite station follows.



Potential vehicle design

There exists a growing body of evidence, to which the case studies bear witness, that smaller buses are viewed more favorably in residential zones, both by nonriders and riders. Smaller buses appear less threatening, are easier to maneuver, and can feel safer to riders. At the same time, transit agency personnel prefer to avoid the smaller transit vehicles due to claims that such vehicles are not sufficiently robust to last through a reasonable duty cycle. There is therefore a growing tendency to settle on 30-foot (as opposed to the more traditional 40-foot) buses as the shuttle vehicles of choice for serving residential neighborhoods. Such vehicles are typically stronger than smaller buses, have reasonable capacity (approximately 25 passengers), and are generally viewed more positively than larger buses.

Partnership-building

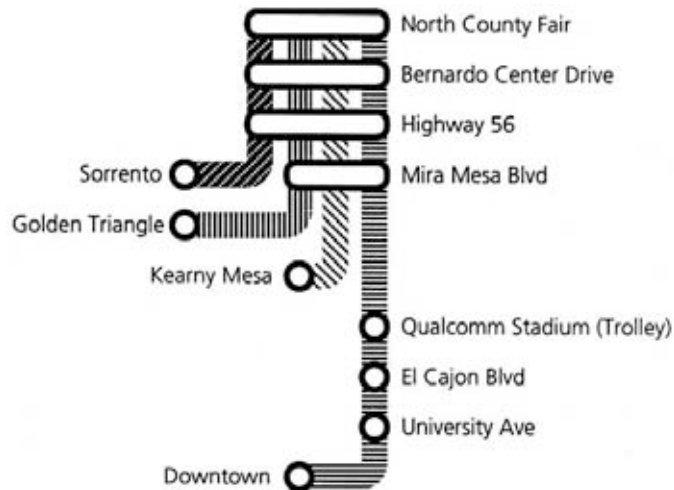
The shuttle and vanpool proposals suggested here both require partnerships among several actors—Black Mountain Ranch, other nearby residential developments, key employers in Bernardo Industrial Park, key employers in other locations in the metro area and the various regional transportation agencies. Such partnerships require some degree of leadership to forge; assistance in developing these relationships may be available from the MTDB, SANDAG’s RideLink Program and the Transportation Alliance of Greater San Diego (formerly the Transportation Management Association).

KEY ISSUES TO BE RAISED WITH THE MTDB

Improve I-15 Rapid Transit Routing

Current plans for the I-15 Rapid Bus alternative are only tentative. Just the same, these plans anticipate a service along the I-15 corridor that will not serve any key employment centers south of SR-56. Such a system may make sense on operational grounds (by operating solely on I-15, the buses can achieve impressive throughspeeds and maintain schedule adherence), but fails on market grounds—the system will require too many potential riders to make too many transfers, some of them uncomfortable, in order to access major employment centers.

For the I-15 service to truly meet the needs of future residents of Black Mountain Ranch, it will need to feature direct service to major employment centers: downtown, Kearny Mesa and the UTC/Sorrento area. Even then, local connecting shuttles might be necessary. The following diagram suggests the kinds of linkages that will be important.



A related issue deals with the frequency of service along the corridor. The current trolley system runs trains every fifteen minutes—but only attracts an approximately 35 percent mode-choice ridership (riders who claim they could have driven a car instead).

The MTDB will need to ensure that service frequencies on the I-15 rapid transit service are sufficient to attract and meet the needs of this overwhelmingly mode-choice market.

Promote a regional shuttle strategy

The development of new high-speed bus services along I-15 suggests the need for a range of connecting shuttle services, much as have been developed by the Santa Clara VTA (outlined in the case studies that accompany this report). The MTDB should be encouraged to develop a shuttle strategy, based on some of the lessons learned in this study, so as to achieve the following goals:

- Better qualify for any state or federal discretionary or demonstration funding;
- Achieve cost-savings through combined bids;
- Extend the reach (and hence attractiveness) of transit investments, thereby improving the likelihood of employer participation;
- Attract more riders to transit services; and
- Prioritize such services for funding, particularly when they meet multiple objectives (such as supporting transit-oriented developments and employment sites).

Design vanpool/shuttle services into Eco Pass programs

Eco pass programs are ideal vehicles for developing funding for specific vanpool and shuttle services. Employers benefit as their need for parking is reduced (and many employers are currently experiencing parking shortages), employees benefit from the range of supporting services (such as guaranteed ride home programs) that are usually built into eco passes, and developments such as Black Mountain Ranch benefit by establishing low-cost, high-impact transit services that reduce local traffic and attract transit-friendly residents.

Stress importance of SR-56/I-15 transfer station

The proposed Bus Rapid Transit station to be located at the intersection of I-15 and SR-56 will be the most important station on the route, as it will serve as the primary transfer point for vehicles traveling west to major employment centers in the Sorrento/Golden Triangle/Miramar zones and east to employment centers in Poway. The MTDB should be encouraged to develop a facility which meets the needs of those for whom the Bus Rapid Transit service is being explored.

SOURCES OF FUNDING

The case studies reviewed at the end of this report suggest a range of funding sources.

Clean Air funding

The Santa Clara Valley Transportation Authority (VTA) relies on state Clean Air Funding to help operate its shuttle service. Each metro area/county disburses these funds according to localized criteria, but there is no reason this alternative should not be explored further, especially if the proposed services enhance the value and attractiveness of transit services in general.

Subscription fees

Certain agencies run subscription services, which are buses that provide transportation to specific employment sites only for those riders who reserve and pay for a seat on these services. While such a service may be established where demand warrants, it is the experience of some agencies that such services are transitional: they either want to be vanpools (lower cost) or grow to become fixed-route regular service. Still, subscription services may be fine for initiating new transit routes.

One-time fees on developers or residents

This is the approach being explored in Sacramento along the Cal Traction Corridor. A per-dwelling unit fee would be paid one-time only into a fund that would then cover the costs of operating new services for a two or three year period.

Shared costs

This is the approach used by the Santa Clara VTA to provide an extensive network of shuttle services. Under such a scheme, residential developments and employers served by shuttles together pay a percentage of the costs of providing the shuttle service, in perpetuity. Because the transit agency agrees to cover a major share of the costs (which it partly recoups by expanded use of existing connecting services), this approach results in relatively modest fees to the residential and industrial partners.

Both the one-time fee and shared cost arrangements create the possibility of offering shuttle services which are free to end-users. This kind of arrangement is useful for establishing services and building ridership quickly, particularly when most riders who use the shuttles will be connecting to paid services.

Eco pass fees

Eco passes are transportation passes purchased by employers for all of their employees at heavily discounted prices. They are easy to administer, which accounts in part for their popularity. Because the price of eco passes is based in part on a calculation of the costs of providing transit services to employees (only a portion of whom actually use such services), the cost per employee is relatively low. An eco pass program can also specify special or new transit services, such as shuttles, when they add value to the employer (it is often much cheaper to provide transit than to rent more parking spaces). Eco passes also shift the cost burden of providing useful transit services from users or residential projects to those who benefit most: employers of the people now served. The San Diego MTDB has expressed considerable interest in developing its eco pass program.

Multiagency agreements

In certain cases, some funding arrangements are not possible due to legal concerns. In such cases, multiagency agreements can ensure the flow of funds from those paying for transit services to those operating such services. An example is Sacramento, which is exploring an arrangement by which transit fees are paid to the county, which may receive such funds, instead of to the transit agency directly, as it is prohibited from receiving fees for operating services.

ELEMENTS FOR SUCCESS

The following “elements for success” were gleaned from the case studies that are included at the end of this report.

Service Planning

- Focus on employers. Shuttle connections make more sense when they serve some people very well, as opposed to serving more people less well. It is better to work with certain key employers in providing direct connections than with providing generalized but low-quality access to more employment sites.
- Connections count. Links to regional systems make sense only if that system can take people where they want to go. It won't be enough to link stations on I-15; the system must include direct links to major employment sites.
- Attract the right customers. Some homebuyers will find transit access to be a positive attribute of Black Mountain Ranch. Attract these transit-friendly people to the project by making the connections visible.

Service Phasing

- Look into vanpools. Vanpools are a simple and cost-effective way of initiating transit services. Because they rely on volunteer drivers, they have low operating costs. They also establish the presence of a transit center and promote the idea of transit services. Vanpools can be negotiated with specific employers and can form part of that employer's “eco pass” program.

- Don't jump the gun. Open-ridership services (those without a captive audience—the opposite of vanpools or subscription services) should not be implemented until a critical mass of residents is achieved. It is generally sufficient to publicize the fact that such services will be established once some critical milestone is reached.
- Start with peak-hour service. It is usually more cost-effective to offer new services during peak hours only. Once established, service hours may be increased.

Funding

- Partnerships are critical. The most effective developments seem to involve the collaboration of regional transit agencies, residential developments and employment sites. What's more, such partnerships are weighed favorably by state and federal granting authorities.
- Explore the options. Some systems collect fees from residents/businesses or developers in order to guarantee funding for services for a start-up period of two to three years, with the agencies committed to assuming all funding responsibilities if ridership meets certain standards. Some agencies charge fares to use shuttle services, while others make them free to riders, especially if most riders are connecting to/from paid transit services. This shift of costs from users to beneficiaries also improves the attractiveness and operations of transit services (fare delays are avoided and it becomes easier to ride).
- Look to employers. Employers may be willing to pay to support certain kinds of transit services, especially if they are facing parking shortages. Employers may make specific contributions to fund shuttles or they may purchase shuttle services as part of an overall "eco-pass" program. Either way, employer buy-in is crucial. It is also much easier to work with a "lead employer" such as Sony, and have other employers sign Memos of Understanding with the lead employer to ensure funding and minimize administrative difficulties.
- Promote a regional approach to shuttles. Economies of scale are achieved when multiple shuttle systems are put out to bid as a group. The MTDB should be encouraged to package shuttle services together in order to obtain the lowest cost for operating them.

Equipment and Facilities

- Use smaller vehicles. Transit users and residents seem to prefer smaller, nicely painted vehicles. They appear more inviting to riders, less threatening to residents, and are identified more with the areas they serve.
- Build places. Transit Centers seem to be more effective and more popular when they are identifiable "places" that are themselves pleasant and somehow visually tied into activity centers. When Transit Centers are visually identifiable, they confer a greater sense of permanence, which means they tend to attract transit-friendly people to become residents in the nearby areas.
- Location is critical. Transit Centers need to be located in central as opposed to peripheral sites. The ideal location for transit access is between a served destination and its parking lot.

- Drop-offs are important. Kiss-and-ride drop-offs seem to be more popular in practice than in theory. Transit Centers should have ample space for drop-offs.
- Mixed-use parking works. Whenever possible, park-and-ride lots should do double duty as parking for other activities, particularly those with complementary demand curves (such as cinemas, churches and even certain kinds of shops). This improves the feel of safety and security, as well as activity.

Organization

- Identify lead employers. Any potential shuttle serving Black Mountain Ranch may also easily serve the Bernardo Industrial Park. It would be worthwhile to identify and work with a lead employer in this park to develop a funding and service plan for a specific shuttle route. There are also major employment sites, such as Qualcomm, SAIC, UCSD, SDSU and the New Century Center, where vanpool services might be jointly planned.

CASE STUDIES

A number of case studies were identified nationwide with at least partial relevance to the Black Mountain Ranch development. Of these, the most important cases are the San Jose River Oaks Shuttle and the Sacramento Cal Traction Corridor.

Pittsburgh-Airport Busway Transit Center

Context. The Port Authority of Allegheny County (PAT Transit) is developing a bus rapid transit service to the Pittsburgh airport, utilizing a dedicated “Busway” and interstate highways. Project. A new Transit Center is being developed at a shopping mall two miles beyond the end of the busway. PAT will be rerouting area service to use this center as a hub, allowing for greater efficiencies and expanded local service. Project completion date is set for 2000/2001. Funding. The developer is donating the land and setting aside 1,000 parking spaces. PAT Transit will pay all operating costs, using funding from ISTEA, §3 transit funding, flex funding and bus rerouting.

San Jose-River Oaks Shuttle

Context. The Santa Clara Valley Transportation Authority has developed a network of 12 shuttle bus routes connecting to Light Rail or CalTrain stations. These shuttles serve major employment centers; one, the River Oaks Shuttle, also serves a residential development.

Project. The VTA runs peak hour shuttles (in-service times from 6:35 - 8:47 A.M. and 4:30 - 6:36 P.M.) with service every 20 minutes (seven trips each am and pm period) during weekdays only; total round-trip time is 12-15 minutes. The River Oaks Shuttle serves several major employers as well as residential developments (primarily condominiums and apartments) with 1,987 dwelling units, many of which are occupied by single professionals (with very few seniors).

Funding. The total annual cost of running the River Oaks Shuttle is between \$55,000-60,000. Costs are split three ways: 25 percent is paid by the seven residential developments and three employers served by the shuttle (Sony's share, for example, is \$2,400 per year); 50 percent comes from state grants (Transportation Fund for Clean Air Act AB434); the remainder is paid for by general VTA funds. Riders are not charged a fee for service. State funding is encouraged by the local cooperation.

Administration of program. The VTA bids multiple shuttles at once in order to achieve economies of scale. As a result of this approach, the VTA has reduced its shuttle per-hour cost of service from \$55-60 to \$37.50. The contract is held by Laidlaw, a national company.

Employer participation is handled by designating one company (in this case, Sony) as the "lead employer." The VTA signs a contract only with this company; Sony then signs Memos of Understanding with other employers and collects contributions from them. This arrangement is much easier for the transit agency to administer. Employers are assessed their contribution based on projected use of the shuttle; actual use is then audited, and contributions adjusted, after a period of service.

Chicago-Prairie Stone Industrial Park

Context. Has no specific development resembling Black Mountain Ranch, though reports a Del Web development "on the drawing board." However, PACE—the suburban Chicago transit agency—is highly experienced in developing transit services to suburban locations. They report the following "lessons learned":

- *Location matters.* Placing transit access between a parking lot and the entrance to whatever the parking lot serves results in far better transit penetration than locating transit peripherally. PACE attributes such location decisions to transit's 30 percent share of work trips to the new suburban Sears corporate headquarters in the Prairie Stone Industrial Park.
- *Focus shuttle services.* It is better to target a single key employer than to attempt to serve all employers equally. Focus allows you to "get closer" and actually solve real trip needs. Such focused service is especially important if connections are also made to residential areas. It is normally quite difficult to get both industrial and residential areas served by a single shuttle.
- *Phasing happens.* The more permanent the transit facility, the more it helps the phasing process by stimulating people to locate near the facility. Subscription bus services should be seen as transitional: they either drop down to vanpool service (with a volunteer driver) or move up to fixed-route service. Be careful about preceding your market for service: you can waste a lot of money.
- *Drop-offs happen.* More people will be dropped-off than you expect. Kiss-and-ride is very big—much bigger than expected. Be sure to have adequate and convenient drop-off facilities.
- *Vehicles matter.* People don't like big buses. Fit the environment. Don't use too large vehicles. Smaller vehicles are less scary coming down the street, especially in residential neighborhoods.

Funding. PACE has an extensive vanpool program—the low operating costs (due to volunteer drivers) results in service that is all but self-financing.

Denver-Highlands Ranch

Context. Highlands Ranch is a 35,000-person “New Urbanism” development located on the southern fringe of the Denver Metropolitan Area. Though the site is partially developed, most of it is still in the planning stages. The development had been begun by Mission Viejo, but had since been purchased by Shea Homes. Denver’s Light Rail system will be extended to within a few miles of Highlands Ranch; the area is currently served by several bus routes, including a form of commuter express service to downtown Denver.

Project. Denver’s Regional Transit District (RTD) is planning service changes associated with the Highlands Ranch development. The current express bus to downtown, which operates in the Ranch area as a local route, then as express-stop only in the nearby area, then direct express to Downtown, will be replaced with two key services: a “main line” shuttle connecting a new Light Rail station with the Highlands Ranch Transit Center (using 40-foot vehicles), and a local circulator shuttle within Highlands Ranch (using smaller vehicles, likely 30 feet). Travel time to the Light Rail will be approximately 12 minutes (with perhaps half a dozen stops en route); the trip downtown by train will take approximately 20 minutes. A third service, a “main line” bus route running up Broadway to downtown, will remain in place. The Town Center portion of the Highlands Ranch is designed similarly to Black Mountain Ranch’s North Village, though appears to be slightly larger, with a 15-acre “Civic Center” complex art of the town center.

The LRT connection will initially run with the same frequency as the commuter express service, with four runs during peak hours. Vanpools in Denver have not been especially successful; they are run by the Regional Council of Governments. The RTD is frequently asked to step in with 40-foot bus service to replace pool programs.

Funding. The RTD does not appear to worry terribly about funding.

Sacramento-Cal Traction Corridor

Context. Sacramento has no current projects with the characteristics of Black Mountain Ranch, but it has a corridor, the Cal Traction Corridor, located in the southeast portion of the county, with characteristics somewhat reminiscent of I-15 in San Diego.

Project. Sacramento is looking at how to fund transit development in the Cal Traction Corridor. They're looking at developer agreements paid to the county, with the county then paying the transit agency to provide service. Though the corridor was initially intended for Light Rail, the transit agency is now exploring a bus rapid transit option.

The general policy for the corridor is to begin service only when a “critical mass” is achieved, and then to begin with just peak-hour service, either direct to downtown or to the nearest LRT station.

Developers will be expected to provide land for transit centers and parking. The transit agency would be responsible for providing bus shelters. Joint-use parking is fully permissible.

Funding. The fee plan being investigated is intended to generate seed money with which to establish new service. The goal is to fund, in advance, 100 percent of the direct operating costs (70-80 percent of the fully allocated costs) for two to three years of service, at which point the new routes can be evaluated for their efficacy. All development in this corridor will be expected to contribute an amount for both capital and operating costs (approximately \$150-200 per dwelling unit for capital costs, which may be paid in kind, and approximately \$100-150 per dwelling unit for operating costs). Capital costs are included in current fees paid by developers. The transit agency anticipates the cost of providing a single bus during peak hours at \$75,000 per year; a minimum of two buses would be needed to provide the necessary frequencies.

Los Angeles-Smart Shuttles/DASH Service

Context. The city of Los Angeles, and the Los Angeles County Metropolitan Transportation Authority, have been instituting new forms of shuttle services in order to test the concepts involved and provide better alternative for short trip-making. All of the current shuttles serve well-developed urban areas (MacArthur Park, South Central, San Fernando Valley East and San Fernando Valley West).

Project. Two kinds of shuttle services are currently offered. Smart Shuttles follow generalized routes but may deviate a block or so to either pick people up or let them off closer to their origins/destinations. Fares are \$1, with a “deviation” fee of 25-50¢ additional. DASH buses (30 feet, 25-passenger vehicles) are fixed-route, fixed-schedule services that serve local routes. Both are proving popular. The smaller vehicles are deemed an important element of service, especially in residential areas.

Funding. The Smart Shuttles are funded for 18-month demonstration periods (the service is six months old). The entrepreneurs running these services contract directly with the city of Los Angeles. They receive from \$1 million to over \$2 million over the contract period; the entrepreneur has some discretion in determining the exact nature of service.

Lessons learned. The MTA reports a few key lessons:

- *Understand your market.* It's important to pay attention to where residents are most likely to come from. It is also helpful to involve the community in designing actual routings—community members may wish to access certain places by transit, and others by taxi or private vehicles.
- *System access.* If shuttles are links to a regional transit system, it's important to ensure that enough of that system is accessible to make transit a viable option.
- *System identification.* Riders seem to respond to services that are viewed as belonging to a neighborhood or community.

Seattle-Issaqua Highlands

Context. Issaquah Highlands is a New Urbanism development planned for a suburban location approximately 18-20 miles east of central Seattle. Though it falls within the modified urban growth boundaries (modified in part to allow this “new urbanism” experiment to be built), it falls outside of the boundaries of the ten-year Sound Move rapid transit plan being implemented in the Puget Sound area (due most likely to inattention).

Project. Issaquah Highlands is still in the planning stages. Information posted on their web site (www.issaquahighlands.com) may not reflect current plans, but indicated three stages of development as follows.

Phase	Year	Single-family Units	Multifamily Units	Retail s.f.	Commercial s.f.
1	1998	320	320	50,000	250,000
2	2001	=1,300	=1,300	375,000	1,250,000
3	2002				1,450,000
Totals:		=1,620	=1,620	425,000	2,950,000

The proposed project is comparable to Black Mountain Ranch, with approximately 60 percent of the housing units, nearly three times the retail, and six times the commercial. Microsoft Corporation has an option on all of the commercial space.

A central feature of the proposed Issaquah Highlands is the proposed transit center/park-and-ride lot(s). At least 500 parking spaces, and perhaps more, will be dedicated to park-and-ride in at least one, and possibly more locations. King County Metro, the transit provider, is looking at providing a total of 20,000 annual service hours to Issaquah Highlands (approximately 40 one-way trips per day), divided among two classes of transit services: commuter express service in the peak periods (most likely to downtown Seattle) and a more local routing throughout the off-peak periods (involving stops at other demand generators en route, such as the University of Washington campus). In addition, the developer has suggested the need for a local circulator shuttle; King County Metro has requested that the developer fund the shuttle at first, and that Metro would take over the route “if it is successful.” No decisions have been reached on any of these points.

Funding. Funding has not been determined for any of the transit alternatives, and there is still considerable discussion as to what form transit will take to the development.